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CULICINE. SABETHINE AND TOXORHYNCHITINE MOSOUITOES OF NEPAL INCLUDING NEW COUNTRY RECORDS

(DIPTERA: CULICIDAE)

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A preliminary record of the culicine and toxorhynchitine (megarhine) mosquitoes of Nepal was published by Peters and Dewar (1956). Their collections were made in the vicinity of Hetaura and Bhimphedi in Makwanpur District, Narayani Zone from which they recorded 29 species in 8 genera and 12 subgenera. They also reported 2 species of Culex (Culex) from Kathmandu District, Bagmati Zone. Stone, Knight and Starcke (1959) in the catalogue of the mosquitoes of the world list 19 non-anopheline species occurring in Nepal. One more species of non-anopheline, Culex (Culiciomuja) longifurcatus Theobald, 1910, the type locality for which is in Eastern Nepal, is recorded by Barraud (1934) as a synonym of Culex (Culiciomyia) viridiventer Giles, 1901.

This paper records the collections from 5 Zones and 11 Development Districts of Nepal. The collections have been made by the entomological staff during numerous anopheline surveys in connection with the malaria control and eradication campaigns since 1956. As a result, 3 more genera: Culiseta, Malaya and Topomuia, four more subgenera: three of the Genus Aedes-Aedimorphus. Mucidus and Neomelaniconion; and one from the Genus Culiseta-Culiseta and 28 more species distributed among 9 genera and 11 subgenera are added as new country records in this paper. The collections have been made mostly in the southern plains (terai) area, but with some work in the inner terai, consisting of low valleys situated between Churia and Mahabharat Ranges, in small valleys amongst Mahabharat Ranges farther north and in Kathmandu Valley, the elevation involved being not higher than 4.500 feet.

The classification system enumerated by Stone, et al. (1959) has been followed in this paper. Identification keys of Thurman (1959),

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Mattingly (1957), La Casse and Yamaguti (1950) and Barraud (1934) were used to make the species determinations.

List of Non-anopheline Mosquitoes Known to Occur in Nepal

Aedes (Aedimorphus) caecus (Theobald)* Aedes (Christophersiomyia) annulirostris (Theobald)^{1, 4} Aedes (Finlaya) albolateralis (Theobald)^{1, 4} Aedes (Finlaya) assamensis (Theobald)² Aedes (Finlaya) aureostriatus var. greenii (Theobald)* Aedes (Finlaya) chrysolineatus (Theobald)* Aedes (Finlaya) dissimilis (Leicester)* Aedes (Finlaya) gubernatoris (Giles)* Aedes (Finlaya) pseudotaeniatus (Giles)* Aedes (Mucidus) scatophagoides (Theobald)* Aedes (Neomelaniconion) lineatopennis (Ludlow)* Aedes (Stegomyia) albopictus (Skuse)¹ Aedes (Stegomyia) unilineatus (Theobald)* Aedes (Stegomyia) vittatus (Bigot)¹ Aedes (Stegonyia) w-albus (Theobald)^{1, 4} Armigeres (Armigeres) kuchingensis Edwards² Armigeres (Armigeres) subalbatus (Coquillett)* Culex (Culex) barraudi Edwards 1, 4 Culex (Culex) bitaeniorhynchus Giles¹ Culex (Culex) epidesmus (Theobald)* Culex (Culex) fuscifurcatus Edwards* Culex (Culex) fuscocephalus Theobald 1. 4 Culex (Culex) gelidus Theobald 1. 4 Culex (Culex) jacksoni Edwards⁵ Culex (Culex) mimeticus Noe¹ Culex (Culex) mimulus Edwards^{1, 4} Culex (Culex) pipiens quinquefasciatus Say¹ Culex (Culex) sinensis Theobald* Culex (Culex) theileri Theobald* Culex (Culex) tritacniorhynchus Giles* Culex (Culex) vagans Wiedemann* Culex (Culex) vishnui Theobald¹ Culex (Culex) white Barraud 2. 4 Culex (Culex) whitmorei (Giles)* Culex (Culiciomyia) pallidothorax Theobald^{2, 4} Culex (Culiciomyia) viridiventer Giles^{3, 1} Culex (Lophoceraomyia) infantulus Edwards^{2, 4} Culex (Lophoceraomyia) minutissimus (Theobald)*

^{*} New record for Nepal.

² Found during this study and also reported by Peters and Dewar (1956). ² Reported by Peters and Dewar (1956) and not found during this study. ³ Reported by Barraud (1934) and not found during this study. ⁴ Reported by Stone *et al.* (1959) as occurring in Nepal.

⁵ Found during this study and reported by Stone et al. (1959).

Culex (Lophoceraomyia) plantaginis Barraud^{2, 4} (?) Culex (Lutzia) fuscanus Wiedemann* Culex (Lutzia) vorax (Edwards)1. 1 Culex (Mochthogenes) castrensis foliatus Brug^{2, 4} Culex (Mochthogenes) malaui (Leicester)^{1, 4} Culex (Neoculex) brevipalpis (Giles)¹ Culiseta (Culiseta) niveitaeniata (Theobald)* Heizmannia himalayensis Edwards* Heizmannia indica (Theobald)^{2,4} Malaya genurostris Leicester* Mansonia (Mansonioides) annulifera (Theobald)* Mansonia (Mansonioides) indiana Edwards* Mansonia (Mansonioides) uniformis (Theobald)¹ Orthopodomuia anopheloides (Giles)¹ Topomuia aureoventer (Theobald)* Uranotaenia annandalei Barraud^{2, 4} Uranotaenia campestris Leicester^{1, 1} Uranotaenia edwardsi Barraud * Uranotaenia luteola Edwards* Uranotaenia maculinleura Leicester* Toxorhynchites (Toxorhynchites) splendens (Wiedemann)¹

The body of this paper contains the locality records of the nonanopheline mosquito taxa present in the Nepal Malaria Eradication Organization, Entomology Section Collection, as well as notes on the habitat of the immature stages and specifically where adults were collected. The localities enumerated are based on the newly organized Zones and Development Districts; (See Fig. 1). The locality names given are respectively: 1. Zone, 2. Development District, 3. Specific locality within the District.

> Subfamily CULICINAE Tribe CULICINI Genus Aedes Meigen 1818

Aedes (Aedimorphus) caecus (Theobald, 1901)

Gandaki, Kaski, Pokhara, 6 lar., VI-56, ex muddy ground pool.

Aedes (Christophersiomyia) annulirostris (Theobald, 1905)

Kosi, Sunsari, Dharan, 19, VI-61, ex outdoor in jungle; reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, reared from contents of holes in mango trees; larva and pupa described.

Aedes (Finlaya) albolateralis (Theobald, 1908)

Bagmati, Kathmandu, Guheswari, 19, VII-60, ex natural outdoor shelter; 19,

^{*} New record for Nepal.

² Found during this study and also reported by Peters and Dewar (1956). ² Reported by Peters and Dewar (1956) and not found during this study. ³ Reported by Barraud (1934) and not found during this study. ⁴ Reported by Stone *et al.* (1959) occurring in Nepal.

⁵ Found during this study and reported by Stone *et al.* (1959).

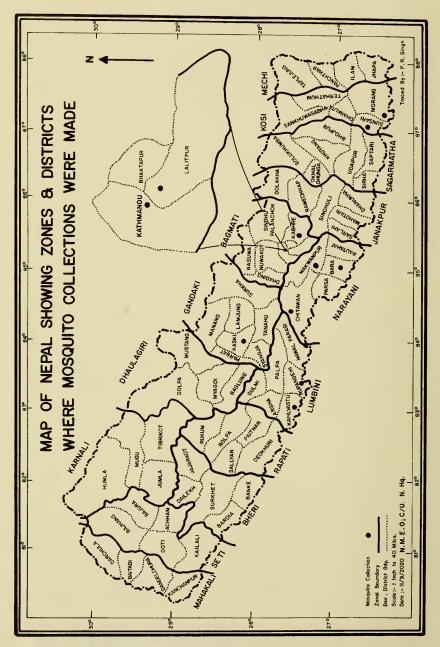


Figure 1. Map of Nepal showing Zones and Districts where mosquito collections were made.

VI-62, emerged from pupa, ex tree hole; Lalitpur, Godavari, 5 lar., VII-63, ex tree hole; reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, reared from contents of holes in mango trees.

Aedes (Finlaya) assamensis (Theobald, 1908)

Reported by Peters and Dewar (1956): Narayani, Makwanpur, Nayagoo (Nayagaon), 1 9, VI-VII-55, ex inside house.

Aedes (Finlaya) aureostriatus var. greenii (Theobald, 1903)

Kosi, Sunsari, Dharan, 3 lar., III-61, ex tree hole.

Aedes (Finlaya) chrysolineatus (Theobald, 1907)

Bagmati, Lalitpur, Godavari, 6 lar., VII-63, ex cistern.

Aedes (Finlaya) dissimilis (Leicester, 1908)

Kosi, Morang, Baukajhora, $1 \$ and $1 \$, IX-61, ex indoor; Sunsari, Dharan, $3 \$ Q , VIII-61, ex outdoor in jungle.

Aedes (Finlaya) gubernatoris (Giles, 1901)

Kosi, Sunsari, Dharan, $2 \Diamond \Diamond$, VIII-61, ex outdoor in jungle; Bagmati, Kathmandu, Wholchowk, $1 \Diamond$, VIII-63, emerged from pupa, ex tree hole.

Aedes (Finlaya) pseudotaeniatus (Giles, 1901)

Bagmati, Lalitpur, Godavari, $12 \Im \Im$ and $5 \Im \Im$, VII-63, emerged from larvae and pupae, ex rock pool; 10 lar., VII-63, ex rock pool; Kathmandu, Sunderijal, 2 lar., X-58, ex rock pool; Kosi, Sunsari, Dharan, $2 \Im \Im$, VIII-61, ex outdoor in jungle.

Aedes (Mucidus) scatophagoides (Theobald, 1901)

Kosi, Morang, Baukajhora, $3 \heartsuit \diamondsuit$, VII-61, ex mosquito net; Fimraha, $3 \heartsuit \heartsuit$, VII-61, ex inside house.

Aedes (Neomelaniconion) lineatopennis (Ludlow, 1905)

Narayani, Bara, Nizgarh, 1 \bigcirc , VI-63, ex pitshelter; Kosi, Morang, Baukajhora, 1 \bigcirc and 3 \Diamond \Diamond , VIII-61, emerged from pupa, ex ground pool.

Aedes (Stegomyia) albopictus (Skuse, 1894)

Kosi, Sunsari, Dharan, $5 \$, VIII-61, ex outdoor in jungle, 5 lar., X-61, ex tree hole; Bagmati, Kathmandu, Wholchowk, $3 \$, and $2 \$, VIII-63, emerged from pupae, ex tree hole; Swayambhunath, $2 \$, IX-63, emerged from pupae, ex tree hole, associated with *Aedes pseudotaeniatus*; reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, reared from dried contents of holes in mango trees.

Aedes (Stegomyia) unilineatus (Theobald, 1906)

Kosi, Sunsari, Dharan, 1 \heartsuit , VIII-61, ex outdoor in jungle; Bagmati, Kathmandu, Balaju, 4 lar., X-58, ex bamboo stump.

Aedes (Stegomyia) vittatus (Bigot, 1861)

Kosi, Sunsari, Dharan, $1 \$ and $1 \$, VIII-61, ex outdoor in jungle; reported by Peters and Dewar (1956): Narayani, Makwanpur, Pokhara (1 mile East of Hetaura), $3 \$ and $2 \$ δ , ex water in wooden tray.

Aedes (Stegomyia)w-albus (Theobald, 1905)

Kosi, Sunsari, Dharan, $2 \heartsuit \diamondsuit$, VIII-61, ex outdoor in jungle; reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, reared from dried contents of holes in mango trees.

Genus Armigeres Theobald, 1901

Armigeres (Armigeres) kuchingensis Edwards, 1915

Reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, $2 \heartsuit \diamondsuit$,

VI-VII-55, ex human bait in tent; Nayagoo, 19, VI-VII-55, ex inside house. Armigeres (Armigeres) subalbatus (Coquillett, 1898)

Kosi, Sunsari, Dharan, $6 \circ \circ$, VI-61, ex outdoor in jungle; Bagmati, Kathmandu, Siphal, $1 \circ$, XII-60, ex inside house; Gyaneswar, $1 \circ$, VIII-63, ex inside house; Kabhre (Palanchowk), Sipatinghora, $1 \circ$, VI-59.

Genus Culex Linnaeus, 1758

Culex (Culex) barraudi Edwards, 1922

Bagmati, Kathmandu, Balaju, 1 lar., VIII-58, ex rice field; reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, larvae from shaded jungle pools, male genitalia and stirrup-shaped piece of larval siphon figured (Fig.2 h,i). *Culex* (*Culex*) *bitaeniorhynchus* Giles, 1901

Kosi, Sunsari, Baukajhora, 1 lar., XII-61, ex fallow rice field; Lumbini, Kapilvastu, Kopuwa, 1 Q, IX-62, ex inside house; Bagmati, Kathmandu, Balaju, 5 lar., VIII-58, ex fallow rice field with green algae; Kuriagaon, 5 lar., VI-59, ex fallow rice field; Lalitpur, Harisiddi, 4 Q Q and 1 J, VII-63, emerged from pupa, ex rice field; Narayani, Chitwan, Rapti Valley, 1 Q and 1 J, IV-63; 1 Q and 1 J, VI-63, ex inside house; reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura and Bhimphedi, collected from residual pools in main river beds, larvae found in irrigation ditches and patches of swampy ground containing shallow pools, adults from native dwellings, cattlesheds, and in tents; Bagmati, Kathmandu, common in back-waters of Bagmati River, where green filamentous algae was abundant.

Culex (Culex) epidesmus (Theobald, 1910)

Kosi, Morang, Baukajhora, $1 \, \emptyset$, VII-61, ex inside house; Narayani, Bara, Nizgarh, $1 \, \emptyset$, VI-63, ex pitshelter; Bagmati, Kathmandu, Kalimati, $1 \, \emptyset$, VIII-63, ex inside house.

Culex (Culex) fuscifurcatus Edwards, 1934

Bagmati, Lalitpur, Godavari, $3 \notin \emptyset$, VII-63, emerged from pupa, ex rice field. Culex (Culex) fuscocephalus Theobald, 1907

Bagmati, Lalitpur, Pharping, 2 lar., VIII-58; Taudaha, 1 lar., XII-58; Kathmandu, Swayambhunath, 1 lar., XI-58; Kalimati, $1 \, \bigcirc$, VIII-63, ex inside house; reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, larvae found in irrigation ditches and patches of swampy ground containing shallow pools. *Culex* (*Culex*) gelidus Theobald, 1901

Bagmati, Kathmandu, Guheswari, 1 lar., VIII-58; Kosi, Morang, Murgatola, $3 \ \circ \ \circ$, X-61, ex house; Baukajhora, 4 lar., III-62, ex fallow rice field; Narayani, Bara, Nizgarh, $1 \ \circ \ and \ 2 \ \circ \ \circ$, VI-63, ex pitshelter; reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, adults found in native dwellings and cattle sheds, and in tents.

Culex (Culex) jacksoni Edwards, 1934

Bagmati, Lalitpur, Lubhugaon, 1 lar., XII-58, ex fallow rice field.

Culex (Culex) mimeticus Noe, 1899

Bagmati, Lalitpur, Taudaha, 1 lar., VII-58, ex rice field; Godavari, $4 \circ \circ$, VII-63, emerged from pupa, ex seepages; reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura and Bhimphedi, ex residual pools in main river beds, irrigation ditches and shallow pools in swampy ground.

Culex (Culex) mimulus Edwards, 1915

Bagmati, Lalitpur, Taudaha, 1 lar., VIII-58, ex rice field; Godavari, 19, XII-

60, emerged from pupa, ex seepage; reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, larvae found in shaded jungle pools.

Culex (Culex) pipiens quinquefasciatus Say, 1823 (= fatigans Wiedemann, 1828) Bagmati, Lalitpur, Taudaha, 1 lar., X-58, 1 lar., XII-58, ex tank; Kathmandu, Kathmandu, 5 lar., X-58, 1 lar., XII-58, ex swamp; Dilli Bazar, 1 lar., XI-58; Kalimati, 1 \mathfrak{P} , VIII-63, ex inside house; Kosi, Sunsari, Dharan, 4 lar., III-62, ex tree hole; reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, larvae in shaded jungle pools, collected from residual pools in main river beds, adults found in native dwellings, cattlesheds, and tents occupied by human; Bagmati, Kathmandu, Kathmandu, adults very common, a serious domestic pest, found in vast numbers in exposed ground pools, drainage pots, and domestic grease traps.

Culex (Culex) sinensis Theobald, 1903

Bagmati, Kathmandu, Tupek, 19, VIII-60, ex inside house; Kathmandu, 19, VII-63, ex inside house; Kalimati, 299, VIII-63, ex inside house.

Culex (Culex) theileri Theobald, 1903

Bagmati, Lalitpur, Taudaha, 6 lar., XII-58; ex large pond; Swayambhunath, 1 lar., XII-58.

Culex (Culex) tritaeniorhynchus Giles, 1901

Narayani, Bara, Nizgarh, $1 \ \ \varphi$, VI-63, ex pitshelter; Chitwan, Rapti Valley, $6 \ \ \varphi$, VI-63, ex outdoor; Bagmati, Kathmandu, Kalimati, $7 \ \ \varphi$ and $1 \ \ \delta$, emerged from pupae, and 6 lar., VII-63, ex rice field; Kathmandu, $3 \ \ \varphi$, VIII-63, ex inside house. *Culex* (*Culex*) vagans Wiedemann, 1828

Kosi, Sunsari, Dharan, I &, X-61, ex outdoor in jungle.

Culex (Culex) vishnui Theobald, 1901 (sensu lata)

Narayani, Chitwan, Rapti Valley, 1 \bigcirc , IV-63, ex outdoor; Bagmati, Kathmandu, Kalimati, 1 \bigcirc , VIII-63, ex house; reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, collected from residual pools in main river beds, adults found in native dwellings, cattlesheds and tents.

Culex (Culex) vishnui Theobald, 1901 (sensu stricta)

Bagmati, Kathmandu, Balaju, 2 lar., VIII-58, ex rice field.

Culex (Culex) whitei Barraud, 1923

Reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, larvae found in shaded jungle pools, larva and pupa described.

Culex (Culex) whitmorei (Giles, 1904)

Bagmati, Kathmandu, Kalimati, 19, VIII-63, ex inside house.

Culex (Culiciomyia) pallidothorax Theobald, 1905

Reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, larvae found in shaded jungle pools.

Culex (Culiciomyia) viridiventer Giles, 1901

Reported by Barraud (1934): Mechi, ? District, Dahawangahary Hills, \mathfrak{P} and \mathfrak{F} , II-08, ex tree holes, garden watertanks and butts; specific locality not possible to determine.

Culex (Lophoceraomyia) infantulus Edwards, 1922

Reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, larvae found in shaded jungle pools, imagines found resting near pools.

Culex (Lophoceraomyia) minutissimus (Theobald, 1907)

Narayani, Chitwan, Rapti Valley, 4 & &, VI-63, ex outdoor; Makwanpur, Jyamere, 1 &, VIII-62, ex outdoor from bushy vegetation.

Culex (Lophoceraomyia) plantaginis Barraud, 1924 (?)

Reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, imagines found at rest near shaded jungle pools, larvae, probably this species, collected from same pools.

Culex (Lutzia) fuscanus Wiedemann, 1820

Kosi, Sunsari, Dharan, 19 and 18, VI-61, ex inside house; Bagmati, Kathmandu, 299, VIII-60, ex inside house; Chauni, 18, VIII-63, emerged from pupa, ex ground pool; Kalimati, 1 9, VI-63, ex on outside of house, 3 9 9, VIII-63, ex on outside of house; Lumbini, Kapilvastu, Taulihawa, $3 \circ \circ$, IX-62, ex inside house.

Culex (Lutzia) vorax (Edwards, 1921)

Bagmati, Kathmandu, Lubhu, 18, X-58, emerged from pupa, ex spring water; reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, found in shaded jungle pools.

Culex (Mochthogenes) castrensis foliatus Brug, 1932

Reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, imagines found resting near shaded jungle pools, male genitalia figured (Fig. 2g). Culex (Mochthogenes) malayi (Leicester, 1908)

Narayani, Bara, Nizgarh, 19, VI-63, ex pit-shelters; reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, pupa from shaded jungle pools, found to contain on dissection unemerged male imago.

Culex (Neoculex) brevipalpis (Giles, 1902)

Kosi, Sunsari, Dharan, 4 lar., III-62, ex tree hole; Morang, Baukajhora, 19, 1X-61, ex outdoor in jungle; reported by Peters and Dewar (1956): Narayani, Makwanpur, Chisapani, 2 lar., VI-VII-55, ex tree hole.

Genus Culiseta Felt, 1904

Culiseta (Culiseta) niveitaeniata (Theobald, 1907)

Bagmati, Kathmandu, Balaju, 1 lar., III-58; Guheswari, $3 \circ \circ$, I-61, emerged from pupa; Kosi, Morang, Fimraha, 19 and 18, X-61 ex inside house.

Genus Heizmannia Ludlow, 1905

Heizmannia himalayensis Edwards, 1922

Kosi, Sunsari, Dharan, 1, VII-61, ex outdoor in jungle.

Heizmannia indica (Theobald, 1905)

Reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, 19, found under rock near shallow jungle seepage pool.

Note: It is very possible that this specimen could have been Heizmannia reidi Mattingly, 1957, on the basis of information given by Mattingly (1957).

Genus Mansouia Blanchard, 1901

Mansonia (Mansonioides) annulifera (Theobald, 1901)

Lumbini, Kapilvastu, Taulihawa, 599, IX-62, ex inside house.

Mansonia (Mansonioides) indiana Edwards, 1930

Kosi, Morang, Baukajhora, $3 \circ \circ$, IX-61, ex inside house.

Mansonia (Mansonioides) uniformis (Theobald, 1901)

Kosi, Morang, Baukajhora, 499, VIII-61, ex inside house; Lumbini, Kapil-

vastu, Taulihawa, $3 \circ \circ$, VIII-62, ex inside house; reported by Peters and Dewar (1956): Narayani, Makwanpur, Nayagoo, $4 \circ \circ$, ex inside house.

Genus Orthopodomyia Theobald, 1904

Orthopodomyia anopheloides (Giles, 1903)

Gandaki, Lamjung, Ghanpokhara, 3 lar., XII-59, ex tree hole, associated with Anopheles annandalei interruptus Puri; Kosi, Sunsari, Dharan, $1 \ q$ and $5 \ d$, X-61, emerged from larvae and pupae, ex tree hole in jungle, associated with Aedes albopictus; 12 lar., X-61, ex tree hole; Bagmati, Kathmandu, Wholchowk, $3 \ d$, VIII-63, emerged from pupae, ex tree hole; associated with Aedes gubernatoris; reported by Peters and Dewar (1956): Narayani, Makwanpur, Chisapani, 1 lar., VI-VII-55, early instar collected from tree hole, associated with Culex brevipalpis, however, the identity of this first instar larva remains in doubt.

Genus Uranotaenia Lynch Arribalzaga, 1891

Uranotaenia annandalei Barraud, 1926

Reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, imagines captured at rest near two small shallow jungle seepage pools; pupa probably of this species described.

Uranotaenia campestris Leicester, 1908

Narayani, Bara, Nizgarh, $1 \, \varphi$, VI-63, ex pit-shelter; reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, imagines captured near two small shallow jungle scepage pools; larvae and pupae found in these pools and described.

Uranotaenia edwardsi Barraud, 1926

Narayani, Chitwan, Rapti Valley, 19, IV-63, ex outdoor (bushes near stream). Uranotaenia luteola Edwards, 1934

Narayani, Makwanpur, Jyamere, 299 and 288, VIII-62, ex bushy vegetation. Uranotaenia maculipleura Leicester, 1908

Narayani, Makwanpur, Jyamere, 299 and 18, VIII-62, ex bushy vegetation.

Tribe SABETHINI

Genus Malaya Leicester, 1908 (= Harpagomyia Meijere, 1909)

Malaya genurostris Leicester, 1908

Lumbini, Rupandehi, Jogikuti, $1\, \heartsuit$, VIII-62, ex outdoor under hollow tree near ant colony.

Genus Topomyia Leicester, 1908

Topomyia aureoventer (Theobald, 1910)

Narayani, Makwanpur, Jyamere, 19, VIII-62, ex bushy vegetation.

Subfamily Toxorhynchitinae

Genus Toxorhynchites Theobald, 1901 (= Megarhinus Robineau-Desvoidy, 1827)

Toxorhynchites (Toxorhynchites) splendens (Wiedemann, 1819) Kosi, Sunsari, Dharan, 233, VIII-61, emerged from pupae, 2 lar., III-62, ex tree hole in jungle; Lumbini, Rupandehi, Jogikuti, 1 3, VIII-62, ex outdoor in jungle; reported by Peters and Dewar (1956): Narayani, Makwanpur, Hetaura, reared from dried contents of holes in mango trees, associated with *Aedes albolateralis*.

SUMMARY

A detailed record of Nepalese non-anophelines has been presented in this paper. A total of 59 non-anopheline species, sub-species and varieties are reported. Amongst these, 28 species and varieties are published for the first time.

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LITERATURE CITED

- Barraud, P. J. 1934. Family Culicidae. Tribes Megarhinini and Culicini. The Fauna of British India, including Ceylon and Burma, Diptera. Vol. V, 463 pp.
- Lacasse, W. J. and S. Yamaguti. 1950. Mosquito Fauna of Japan and Korea. Japan, 207th. Malaria Survey Detachment, Office of Surgeon, 8th. Army, 213 pp.
- Mattingly, P. F. 1957. The culicine mosquitoes of the Indo-malayan areas. Part II. Genus *Heizmannia* Ludlow. British Museum (Natural History), London, 57 pp.
- Peters, W. and S. C. Dewar. 1956. A preliminary record of the megarhine and culicine mosquitoes of Nepal with notes on their taxonomy (Diptera: Culicidae). Ind. J. Mal. 10 (1): 37–51.
- Stone, A., K. L. Knight, and H. Starke. 1959. A synoptic catalogue of the mosquitoes of the world (Diptera, Culicidae). Ent. Soc. Amer. Thomas Say Found. Vol. VI, 358 pp.
- Thurman, E. H. B. 1959. A contribution to a revision of the Culicidae of Northern Thailand. Univ. Md. Agr. Expt. Sta. Bull. A-100, 177 pp.